Please amend the claims as follows:

1 (currently amended). A method of operating an air compressor system for a railroad locomotive comprising an air compressor, an electric motor receiving electric power from an alternator mechanically coupled to a locomotive engine and driving the air compressor, with the motor being directed to operate at a commanded speed and operating at an actual speed when driving the air compressor, the method comprising:

determining the commanded speed of the electric motor;

determining the actual speed of the motor in driving the air compressor;

determining a parameter indicative of the slip between commanded and actual speeds, wherein the value of the slip is ~~defined by~~based at least in part on the following relationship:

a difference between locomotive engine speed and compressor speed adjusted by a ratio of a number of active poles relative to a total number of poles of the motor ~~slip= [ES - ((number of active poles of the motor / total number of poles of the motor) * CS)]/ES,~~

~~wherein ES represents locomotive engine speed and CS represents compressor speed; and~~

predicting a faulted condition in the operation of the air compressor system in response to the parameter; and

generating an indication of the faulted condition regarding the operation of the air compressor system.

2 (original). The method of claim 1, further comprising performing a corrective action responsive to the predicted faulted condition.

3 (original). The method of claim 2, further comprising cycling an air compressor bypass valve in response to the predicted faulted condition.

4 (original). The method of claim 1, further comprising:

comparing the determined parameter to an allowable value; and

performing a corrective action when the determined parameter differs from the allowable value by a predetermined value.

5 (original). The method of claim 1, further comprising measuring an air pressure value in a reservoir coupled to receive pressurized air from an air compressor coupled to said air compressor motor, and comparing the measured pressure value relative to a predetermined upper limit for identifying a type of the predicted faulted condition responsive to the slip parameter.

6 (original). The method of claim 5, wherein, when the measured pressure value exceeds the predetermined upper limit, the identified type of predicted faulted condition comprises a compressor unloading faulted condition.

7 (original). The method of claim 5, wherein, when the measured pressure value is below the predetermined upper limit, the identified type of predicted faulted condition comprises a compressor speed faulted condition.

8 (original). The method of claim 6, wherein, when a compressor unloading faulted condition has been identified, on a next start of the compressor motor, commanding an engine speed at a predefined relatively elevated value.

9 (currently amended). A compressed air system for a railroad locomotive comprising:

a compressor;

a motor driving the compressor;

an alternator energizing the motor;

a locomotive engine mechanically coupled to drive the alternator;

a controller comprising logic configured to determine an actual slip between the motor and the alternator, wherein the value of the slip is ~~defined by~~based at least in part on the following relationship:

a difference between locomotive engine speed and compressor speed adjusted by a ratio of a number of active poles relative to a total number of poles of the motor ~~Slip = [ES - ((number of active poles of the motor / total number of poles of the motor) * CS)]/ES~~,

wherein ES represents locomotive engine speed and CS represents compressor speed; ~~and~~

a control module for comparing the actual slip to an allowed value of slip.

10 (previously presented). The compressed air system of claim 9 wherein said control module is configured to perform a corrective action responsive to a predicted faulted condition in the operation of the compressed air system.

11 (original). The compressed air system of claim 9 further comprising an air compressor bypass valve, and wherein said control module is configured to cycle said air compressor bypass valve in response to the predicted faulted condition.

12 (original). The compressed air system of claim 9 wherein said control module is configured to compare the determined parameter to an allowable value, and to perform a corrective action when the determined parameter differs from the allowable value by a predetermined value.

13 (original). The compressed air system of claim 9 further comprising a pressure sensor for measuring an air pressure value in a reservoir coupled to receive pressurized air from an air compressor coupled to said air compressor motor, and wherein said control module is configured to compare the measured pressure value relative to a predetermined upper limit for identifying a type of the predicted faulted condition responsive to the slip parameter.

14 (original). The compressed air system of claim 13, wherein, when the measured pressure value exceeds the predetermined upper limit, the identified type of predicted faulted condition comprises a compressor unloading faulted condition.

15 (original). The compressed air system of claim 13, wherein, when the measured pressure value is below the predetermined upper limit, the identified type of predicted faulted condition comprises a compressor speed faulted condition.

16 (original). The compressed air system of claim 13, wherein, when a compressor unloading faulted condition has been identified, the control module is configured to command, on a next start of the compressor motor, an engine speed at a predefined relatively elevated value.

17 (original). The compressed air system of claim 9 comprising part of equipment onboard a locomotive and wherein said power source comprises an alternator coupled to a main engine of the locomotive and wherein said compressed air system further comprises a first speed sensor coupled to one of said alternator and said engine, and a second speed sensor coupled to said air compressor motor, the signals from said first and second speed sensors supplied to said controller to determine the actual slip of said motor.